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Liquid extraction of inorganic acids with α-aminophosphoryl compounds

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Abstract

Liquid extraction of inorganic acids, such as hydrochloric, hydrobromic, hydroiodic, and nitric, with four α-aminophosphonates with different-size hydrocarbon substituents in the aminomethylphosphoryl skeleton was studied. The extraction effectiveness increases with increasing number of carbon atoms in the molecules of organophosphorus extractants, that is with increase in their lipophilicity, and is also affected by the hydration enthalpy of the inorganic acid anion. The extractive ability of phosphorylated amines is 3-4 orders of magnitude lower compared with corresponding amines, on account of the fact that the basicity of the former is decreased by the electron-acceptor phosphoryl group. The absence of satisfactory linear two- and three-parameter correlations between the extraction constants and the number of carbon atoms in and the basicity of phosphorylated amines is evidently connected with the disregard for other structural and medium factors that may influence the extraction coefficients. ©2005 Pleiades Publishing, Inc.

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